

Historic, Archive Document

Do not assume content reflects current
scientific knowledge, policies, or practices.

1 Ag 84 Pro #331
cop. 2
Watch out for

WITCHWEED

a parasitic plant that
attacks corn, sugarcane,
sorghum, and other plants



ANIMAL AND PLANT HEALTH INSPECTION SERVICE
U.S. DEPARTMENT OF AGRICULTURE • PA-331

Watch out for **WITCHWEED** a parasitic plant that attacks corn, sugarcane, sorghum, and other plants

Witchweed (*Striga* spp.) is a parasitic plant that attacks corn, sorghum, sugarcane, rice, and more than 60 species of the grass family.

This foreign weed is a serious pest in South Africa and many

other parts of the world. It was discovered in the United States in 1956 in adjoining areas of eastern North Carolina and South Carolina and has been contained in the same general area ever since.

APPEARANCE

Witchweed plants are small and bright green. Leaves are narrow and slightly hairy. The upper and lower leaf surfaces look alike. The stem is square.

The plants rarely grow more than

8 or 12 inches high. Some, however, may reach a height of 18 inches.

The flowers are small, usually bright red, but some may be yellowish-red, yellow, or almost white.

HOW IT GROWS

One witchweed plant may produce up to 500,000 microscopic seeds in a single year. They are spread by farm or construction equipment, water, movement of seed-infested soil, and locally by wind.

Witchweed seeds can lie dormant, but viable, in the soil for more

than 15 years. Germination occurs when the seeds are stimulated by secretions from plant roots. About 2 weeks of preconditioning in moist, warm soil is required before the seed will germinate.

In germinating, a witchweed seed puts out a rootlike growth called haustorium that penetrates the

roots of nearby host plants. If host plants are not within about one-eighth of an inch, the new plant will not live.

Once attached to a plant, the witchweed robs its host of food and water. It is during the "below-ground-period" that the parasite does its severest damage. After emerging, the weed manufactures part of its own food, but continues drawing on the host for water, minerals, and nutrients.

Emergence usually begins in June. Flowering begins 20 to 30 days after the seedlings appear

above ground. The seed pods mature 3 to 4 weeks after the flowers appear. A total of 70 to 90 days are required from germination to maturity. Germination, flowering, and seed production continue until frost.

Witchweed grows best in warm temperatures and on light soils with high moisture levels. It can, however, grow under the wide range of soil, temperature, and moisture conditions found in the grain-, sorghum-, and corn-growing areas of the United States.

DAMAGE

The amount of crop damage depends on the degree of witchweed infestation. A heavy infestation can result in complete loss of the crop.

Attacked plants show symptoms similar to those caused by acute drought. They become stunted,

wilted, and turn yellowish. Plants heavily parasitized may die.

Symptoms of witchweed damage normally appear on host plants before the parasitic weed emerges from the ground.

COOPERATIVE PROGRAM

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) in cooperation with North Carolina and South Carolina is conducting a program to eradicate witchweed. This program has been responsible for

keeping the parasitic weed confined to those two States. The pest has been eradicated from 8 of the 36 infested counties.

Work under the program includes survey, regulatory, control, and methods development activities.

Survey

Each year APHIS conducts in-depth surveys in the infested and surrounding noninfested areas. The information obtained is used to (1)

plan cooperative control and regulatory activities, (2) locate possible outbreaks, and (3) judge the effectiveness of the control work.

WITCHWEED



- (A) corn plant stunted by witchweed
- (B) general appearance of the weed
- (a) seed pods
- (b) blossoms
- (C) attachment of weed root to corn root (greatly magnified)

The pencil is to indicate actual size of plant.



A.ushman 1957

Quarantine

Federal-State quarantines are imposed on all infested areas. Restrictions of the movement of materials that might carry and spread witchweed seed are applied only to infested counties or properties within these States. Regulated materials include soil, plants, certain agricultural crops, and farm

and construction equipment.

Before moving regulated articles from an infested area, check with your State or Federal Plant protection and Quarantine Programs Inspector or county agricultural agent. These officials can explain the quarantine restrictions.

Control

Herbicide treatments to control witchweed begin before witchweed blooms and continue as needed until about 2 weeks before the normal frost date. This control work is repeated when suitable host crops are available, annually until surveys show eradication is achieved.

Small, isolated infested areas are sometimes fumigated to kill viable seeds in the soil, thus reducing the threat of further spread. The fumigant used is methyl bromide.

The cost of control activities is borne by the Federal and State Governments.

Methods Development

APHIS operates a Methods Development Laboratory near Whiteville, N. C. This facility conducts investigations into improved and more efficient ways to eradicate witchweed. Areas of study include:

- **Herbicide evaluation:** New herbicides have been found that are effective on witchweed. Promising materials are still being evaluated. The evaluation program is a continuous one.

- **Equipment development:** Improvements in equipment that have enhanced the quality of herbicide application include front-mounted booms, spring steel drops, whirl chamber nozzles, and pressure stability systems.

Subsurface layer applicator.—This equipment represents a new concept in herbicide application. It can apply the chemical in a continuous layer under the soil surface around a growing crop. This technique enables full-season control of witchweed with a single application of herbicide.

Shielded sprayer.—Use of this equipment permits low-volume herbicide application without drift hazard. It is particularly useful near crops sensitive to herbicides.

- **Total farm weed-control programs:** This concept involves a total survey and control effort to prevent the production of witch-

weed seed anywhere on the farm. Under the program, the witchweed seed in the soil will be depleted, thereby making eradication possible.

- **Witchweed seed detection:** A system has been developed for identifying witchweed seeds in the soil. Separation of the seeds from soil samples can indicate the extent of infestation, effectiveness of treatments, and when eradica-

tion has been achieved.

- **Germination stimulants:** Studies show that artificial stimulants injected into the soil will induce germination of witchweed seed even in the absence of a host plant. The seeds will undergo suicidal germination. This system can destroy the witchweed seeds in the soil, thus achieving eradication.

HOW YOU CAN HELP

Notify your county agricultural agent if you find a plant that you think may be witchweed on your farm. Ask for an on-the-farm identification — **DO NOT MOVE SUSPECTED PLANTS FROM YOUR FIELD!**

Cooperate with State and Federal control program officials if your farm is infested. To achieve total eradication, you should also follow recommended control practices on land or crops not included in the control program.

Cotton, peanuts, soybeans, and other broad-leaved crops are not parasitized by witchweed. They do, however, produce the stimulant that causes the witchweed seed to germinate. Keep such

crops free of crabgrass and other weedy grasses that are hosts for witchweed. If no host plant is present, germinating witchweed seed will die.

In early crops, such as cucumbers and tobacco, witchweed may appear on crabgrass or other weedy grasses after harvest. Fields planted with these crops should be cultivated or sprayed after harvest to destroy host grasses and kill witchweed before it can produce seed.

On uncultivated land, such as ditchbanks, roadsides, and abandoned fields, spray witchweed plants before they bloom. Repeat the treatment as necessary until all host plants are killed by frost.

Plant Protection and Quarantine Programs
Washington, D. C. Revised February 1975

